CURRICULUM VITAE

Jonathan Michael Hays

Date of Birth:	22nd August 1974	**Nationality:**	British
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Employment and University Education

1992 - **Imperial College** London, SW7 2AZ, UK

2000 - Research Associate

After joining DØ as part of the Imperial College group in September 2000, I took a leading role in the level 3 trigger group as sub-system coordinator. This carried with it the responsibility for coordinating and troubleshooting the weekly releases of software for the level 3 trigger system. I quickly expanded this role, becoming the expert on all aspects of the level 3 software infrastructure. During the online commissioning of the trigger system, I was responsible for preparing, organising and carrying out online testing of both the infrastructure and the algorithms in the level 3 software. Since then I have continued to provide technical and administrative support: debugging and troubleshooting code developement and contributing to software release scheduling and code upgrade design.
In recent months, I have been gradually handing over my level 3 responsiblities to our new level 3 sub-system coordinator, allowing me to expand my contributions elsewhere in the experiment. In particular, as a member of the Jet Energy Scale and Higgs mass groups, I have been studying the "Energy-Flow" algorithm. This attempts to improve the jet energy resolution by combining information from different sub-detectors. I was recently selected to join the newly-formed Calorimeter Algorithms Task Force where I expect to play an active role in the effort to improve the calorimeter performance.

1996 - 2000 PhD : Experimental Particle Physics

Working on the Compact Muon Solenoid experiment (CMS) for the Large Hadron Collider (LHC) at CERN, I concentrated on the study of the performance of the $PbWO_4$ crystal end-cap electro-magnetic calorimeter (ECAL), using GEANT based simulations. This led to the development of electromagnetic shower clustering and reconstruction techniques based primarily upon the study of the two photon decay channel of the Higgs particle. This study was used to validate the design of the endcap ECAL and contributed to the physics performance chapter of the CMS-ECAL Technical Design Report. The GEANT detector geometry definition and the reconstruction software developed as a part of this work were included in the collaboration central simulation CMSIM. I also played an active role in test-beam work, involving both hardware and software. This included: the coding of on-line monitoring systems which allowed the quick diagnosis of potential problems and analysing the energy resolution performance of ECAL prototypes.

I also studied the B-physics channel $B_d \rightarrow J\psi\ K_s, J/\psi \rightarrow l^+l^-$, concentrating on B-meson flavour tagging using electrons and the resulting effect on the sensitivity of a measurement of $\sin 2\beta$ at CMS.

1998 NATO - Advanced Study Institute on Techniques and Concepts of High Energy Physics (by invitation)
St. Croix, USVI, June 18-29, 1998

1997 Rutherford Summer School for Young High Energy Physicists,
Rutherford Appleton Laboratory, Chilton, UK

1992 - 1996 BSc (Hons) Physics With a Year in Europe [class 1]
Year in Europe : Gruppe Eyrich, University of Erlangen-Nuremberg.
Project title: "A Beam Monitoring and Control System"
During the course of the project I constructed and tested the readout electronics for a simple scintillating fibre detector. This involved both customising existing electronics and writing the readout and analysis software . I also developed software to enable the detector to be used as part of a feedback system to monitor and correct directional beam instabilities. Tests of this system were performed on the Tandem accelerator at the University of Erlangen-Nuremberg and at the COSY-TOF experiment, KFA Jülich.

Computing skills

I have experience of the UNIX, DOS and Windows operating systems. I can program in FORTRAN, C and have extensive experience of C++. I also have valuable experience in using high energy physics software packages including: ROOT, PAW, HBOOK, ZEBRA, JETSET/PYTHIA and in particular the GEANT detector simulation package.

Languages

English is my mother tongue. I speak, read and write basic French and I am fluent in German.

Publications

Energy Resolution of Lead Tungstate Crystal Matrix with Vacuum Phototriode Photo-detectors for the CMS End-cap Electromagnetic Calorimeter **CMS NOTE 2000/014**
Electromagnetic Calorimeter Technical Design Report **CERN/LHCC 97-33 (1997)**

Invited talks - on behalf of the DØ collaboration

38th Rencontres de Moriond, Les Arcs, France, March 2003 : Non-SUSY searches at the Tevatron
DPF-2002, Williamsburg, Virginia, 2002 : DØ RunII Trigger and Data Acquistion System